REMARKS

Claims 70-72, 74-77, 79-80, 85, 99, 105-106, 108-111, 113-114, 119, 133, and 139-148 are pending in the application. Claims 105-106, 108-111, 113-114, 119, and 133 are withdrawn. Claims 139-148 have been added. The specification has been amended to remove an embedded hyperlink, to capitalize and mark trademarks, and to add generic terminology to accompany the marks. The title has been amended. No new matter has been added.

Support for new claim 139 may be found at least, e.g., in original claim 74. Support for new claims 140-142 may be found at least, e.g., at page 45, line 33 to page 46, line 4 of the specification as filed. Support for new claim 143 may be found at least, e.g., in original claim 70. Support for new claim 144 may be found at least, e.g., in original claims 70, 72, and 74. Support for new claim 145 may be found at least, e.g., at page 14, line 16 to page 15, line 2. Support for new claim 146 may be found at least, e.g., in original claim 81. Support for new claims 147-148 may be found at least, e.g., at page 52, lines 18-24.

Objection to the Specification

The Examiner objects to the specification as containing trademarks that are not clearly noted as such. Applicant has amended the specification to capitalize and mark the noted trademarks, except Bferon, and to add the generic terminology. A search of the trademark database at the U.S.P.T.O. website did not identify Bferon as a registered mark. Accordingly, reconsideration and withdrawal of the objection is respectfully requested.

The Examiner objects to the specification as containing an embedded hyperlink on page 9, at line 17. Applicant has amended the specification to remove the hyperlink. Accordingly, reconsideration and withdrawal of the objection is respectfully requested.

The Examiner objects to the title of the application as allegedly being not descriptive. The title has been amended to "THERAPIES FOR GLOMERULONEPHRITIS USING INTERFERON-BETA-1." Accordingly, reconsideration and withdrawal of the objection is respectfully requested.

Claim rejections under 35 U.S.C. §§ 102-103

Claims 70, 71, and 99 stand rejected under 35 U.S.C. § 102(b) for allegedly being anticipated by Ueda et al. (1990). Claims 70, 72, 74, and 79 stand rejected under 35 U.S.C. § 102(b) for allegedly being anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as allegedly being obvious over Ueda et al. (1990). More specifically, the Examiner states:

> Ueda et al. teach the administration of interferon-ß to treat glomerulonephritis in patients . . . . The reference teaches that the administration of interferon-ß results in improvement of proteinuria (abstract). . . [I]t is assumed that the interferon-ß administered is from human and of mature form. Furthermore it is assumed that it is interferon-ß-1a that is administered because it is the mature form. . . However, if the interferon-ß administered is not mature human form it would be obvious to administer human interferon-ß to avoid immune reaction. (*Office Action*, at pp. 3-4).

Applicant respectfully traverses. "To anticipate a claim, the reference must teach every element of the claim." (MPEP §2131) Additionally, "obviousness requires a suggestion of all limitations in a claim." *CFMT, Inc. v. Yieldup Intern. Corp.*, 349 F.3d 1333, 1342 (Fed. Cir. 2003) (citing *In re Royka*, 490 F.2d 981, 985 (CCPA 1974)). The reference cited by the Examiner does not teach or suggest all of the claimed limitations. In particular, Ueda et al. does not teach or suggest a method of treating glomerulonephritis in a mammal. Instead, Ueda et al. teach treatment of hepatitis B with IFN-ß.

It is Applicant who teaches a method for treating glomerulonephritis in a mammal, comprising identifying a mammal having glomerulonephritis and administering to the mammal a therapeutically effective amount of an IFN-β therapeutic. Examples 1 and 2 of the present specification describe the results of IFN-ß treatment in a rat model that closely resembles human crescentic glomerulonephritis. Example 3 of the present specification describes the results of IFN-ß treatment in a renal failure Thy1 glomerulonephritis animal model. In both models of glomerulonephritis, treatment with IFN-ß is shown to significantly reduce proteinuria. In the rat model that closely resembles human crescentic glomerulonephritis, disease is induced by injecting nephrotoxic (NTS) serum, that is produced by the immunization of rabbits with a preparation of lyophilized rat glomerular basement membrane. In the Thy1 glomerulonephritis

animal model, disease is induced by a single i.v. injection of a monoclonal anti-Thy1 antibody. In contrast, Ueda et al. teach amelioration of an underlying hepatitis B disease with IFN-ß.

Further with respect to this rejection as it relates to 35 U.S.C. § 103, to establish a *prima facie* case of obviousness, "a reasonable expectation of success is required." (MPEP §2143.02) Applicants respectfully submit that at the time of filing there existed no reasonable expectation of success that a method for treating glomerulonephritis in a mammal, comprising identifying a mammal having glomerulonephritis and administering to the mammal a therapeutically effective amount of an IFN-β therapeutic, would be effective, absent the teachings of the present specification. As stated above, Ueda et al. teach amelioration of an underlying hepatitis B disease with IFN-ß. According to Ueda, "Hbe-Ag and DNA polymerase have disappeared with development Hbe-Ab (seroconversion) about six months after the end of interferon-ß administration." (*See* Abstract.) Ueda et al. further state, "[t]hen nephrotic syndrome has recovered in imcomplete (*sic*) remission after a year and a half follow-up." (*See* Abstract.) Incomplete remission of nephrotic syndrome after a year and a half follow-up is not evidence that IFN-ß treatment directly resulted in improvement. One of skill in the art would have no reasonable expectation of success based on the teachings of Ueda et al., which are related to treatment of a virus, that a method for treating glomerulonephritis, comprising identifying a mammal having glomerulonephritis and administering to the mammal a therapeutically effective amount of an IFN-β therapeutic, would be effective, absent the teachings of the present specification.

Assuming *arguendo* that Ueda et al. teach a method for treating nephrotic syndrome, Ueda et al. do not teach a method of treating glomerulonephritis in a mammal wherein the glomerulonephritis was not caused by a virus, or wherein the mammal does not harbor a hepatitis virus, such as a hepatitis B virus, as recited in Applicant's claims 140-142. For the same reason, Ueda et al. do not teach method for treating glomerulonephritis in a mammal, consisting essentially of identifying a mammal having glomerulonephritis and administering to the mammal a therapeutically effective amount of an IFN-β therapeutic, as recited in claims 143-144 and 148. The subject matter of claims 143-144 and 148 is such that identifying a mammal having Hepatitis B is not required.

Additionally, Ueda et al. teach away at least from the methods of Applicant's claims 140-144. The subjects of the Ueda et al. reference are hepatitis B carriers associated with nephrotic syndrome. Ueda et al. summarize, "[t]hese facts suggest that the improvement of proteinuria is associated with the decrease in HBV replication due to interferon therapy." (*See abstract.*) Based on the teachings of Ueda et al., one of skill in the art would not have a reasonable expectation of success that IFN-ß treatment of glomerulonephritis, wherein the glomerulonephritis was not caused by a virus, or wherein the mammal does not harbor a hepatitis virus, such as a hepatitis B virus, as recited in claims 140-142, would be effective. Based on the teachings of Ueda et al., one of skill in the art would not have a reasonable expectation of success that a method for treating glomerulonephritis in a mammal, consisting essentially of identifying a mammal having glomerulonephritis and administering to the mammal a therapeutically effective amount of an IFN-β therapeutic, as recited in claims 143-144 and 148, would be effective. It is Applicant's discovery, however, that a method for treating glomerulonephritis in a mammal, consisting essentially of identifying a mammal having glomerulonephritis and administering to the mammal a therapeutically effective amount of an IFN-β therapeutic, as recited in claims 143-144 and 148, would be effective. It is further Applicant's discovery, that IFN-ß can be used for treating glomerulonephritis, regardless of whether the glomerulonephritis was caused by a virus, or when the mammal does not harbor a hepatitis virus, such as a hepatitis B virus, as recited in Applicant's claims 140-142. (*See specification*, at page 45, line 33 to page 46, line 4). Applicant respectfully submits that the claims are novel and nonobvious and therefore requests that the rejection under 35 U.S.C. § 102 and § 103 in view of Ueda et al. be withdrawn.

Claim rejections under 35 U.S.C. § 103

Claims 70-72, 74-77, 79-80, 85, and 99 stand rejected under 35 U.S.C. § 103(a) as allegedly being obvious over Ueda et al. (1990) in view of Pedersen et al. (U.S. Pat. No. 6,531,122). More specifically, the Examiner states:

> Pedersen et al. teach various interferon-ß preparations. The Pedersen reference teaches mature interferon-ß of SEQ ID NO: 2 . . . which is identical to SEQ ID

> NO: 4 of the instant invention . . . The glycosylation of interferon-ß-1b is also disclosed . . . The pegylation of interferon-ß is also discussed . . . . Therefore, it would have been *prima facie* obvious at the time of the invention to modify the treatment methods of Ueda et al. . . . to treat glomerulonephritis in mammals . . . by administering various interferon-ß molecules as disclosed in Pedersen et al. (*Office Action*, at pp. 5-6).

Applicant respectfully traverses. "[O]bviousness requires a suggestion of all limitations in a claim." *CFMT, Inc. v. Yieldup Intern. Corp.*, 349 F.3d 1333, 1342 (Fed. Cir. 2003) (citing *In re Royka*, 490 F.2d 981, 985 (CCPA 1974)). The combination of references cited by the Examiner does not teach or suggest all of the claimed limitations. In particular, Ueda et al. does not teach or suggest a method of treating glomerulonephritis in a mammal; instead, Ueda et al. teach treatment of hepatitis B with IFN-ß. Pedersen et al. do not cure this deficiency.

Further, to establish a *prima facie* case of obviousness, "a reasonable expectation of success is required." (MPEP §2143.02) Applicants respectfully submit that at the time of filing there existed no reasonable expectation of success that a method for treating glomerulonephritis in a mammal, comprising identifying a mammal having glomerulonephritis and administering to the mammal a therapeutically effective amount of an IFN-β therapeutic, would be effective, absent the teachings of the present specification. As stated above, Ueda et al. teach amelioration of an underlying hepatitis B disease with IFN-ß. According to Ueda, "Hbe-Ag and DNA polymerase have disappeared with development Hbe-Ab (seroconversion) about six months after the end of interferon-ß administration." (*See* Abstract.) Ueda et al. further state, "[t]hen nephrotic syndrome has recovered in imcomplete (*sic*) remission after a year and a half follow-up." (*See* Abstract.) One of skill in the art would have no reasonable expectation of success based on the teachings of Ueda et al. in view of Pedersen et al. that a method for treating glomerulonephritis, comprising identifying a mammal having glomerulonephritis and administering to the mammal a therapeutically effective amount of an IFN-β therapeutic, would be effective, absent the teachings of the present specification.

Ueda et al. in view of Pedersen et al. do not teach a method of treating glomerulonephritis in a mammal when the glomerulonephritis was not caused by a virus, or when the mammal does not harbor a hepatitis virus, such as a hepatitis B virus, as recited in Applicant's claims 140-142. For the same reason, the cited references do not teach method for treating glomerulonephritis in a

mammal, consisting essentially of identifying a mammal having glomerulonephritis and administering to the mammal a therapeutically effective amount of an IFN-β therapeutic, as recited in claims 143-144 and 148. The subject matter of claims 143-144 and 148 is such that identifying a mammal having Hepatitis B is not required.

Additionally, Ueda et al. teach away at least from the methods of Applicant's claims 140-144 and 148. The subjects of the Ueda et al. reference are hepatitis B carriers associated with nephrotic syndrome. Ueda et al. summarize, "[t]hese facts suggest that the improvement of proteinuria is associated with the decrease in HBV replication due to interferon therapy." (*See abstract.*) Based on the teachings of Ueda et al., one of skill in the art would not have a reasonable expectation of success that IFN-ß treatment of glomerulonephritis would be effective when the glomerulonephritis was not caused by a virus, or when the mammal does not harbor a hepatitis virus, such as a hepatitis B virus, as recited in claims 140-142. Based on the teachings of Ueda et al., one of skill in the art would not have a reasonable expectation of success that a method for treating glomerulonephritis in a mammal, consisting essentially of identifying a mammal having glomerulonephritis and administering to the mammal a therapeutically effective amount of an IFN-ß therapeutic, as recited in claims 143-144 and 148, would be effective. Applicant's discovery includes a method for treating glomerulonephritis in a mammal, consisting essentially of identifying a mammal having glomerulonephritis and administering to the mammal a therapeutically effective amount of an IFN-ß therapeutic, as recited in claims 143-144 and 148. Applicant also discovered that IFN-ß can be used for treating glomerulonephritis, when the glomerulonephritis was not caused by a virus, or when the mammal does not harbor a hepatitis virus, such as a hepatitis B virus, as recited in Applicant's claims 140-142. (*See specification*, at page 45, line 33 to page 46, line 4). Applicant respectfully submits that the claims are nonobvious and requests withdrawal of the rejection under 35 U.S.C. § 103.

CONCLUSION

In view of the amendments and arguments presented above, Applicant believes the claims are in condition for allowance, which action is respectfully requested. If a telephone conversation with Applicant's Agent would expedite the prosecution of the above-identified application, the Examiner is urged to call the undersigned at (617) 832-1749.

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Respectfully submitted,

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